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Phase transitions in a class of infinite particle systems

Abstract

We study infinite (random) systems of interacting particles living in a Euclidean space X and possessing internal parameter (spin) in $\mathbb{R}^1$. Such systems are described by Gibbs measures on the space $\Gamma(X, \mathbb{R}^1)$ of marked configurations in X (with marks in $\mathbb{R}^1$). For a class of pair interactions, we show the occurrence of phase transition, i.e. non-uniqueness of the corresponding Gibbs measure, in both 'quenched' and 'annealed' counterparts of the model.